

L. Leidyi, var. *Baenschiana*, Goldenberg, Fauna Sarapontana Fossilis, Heft 1, 1873, p. 24.

L. Leidyi, var. *Baentschiana*, Goldenberg, *op. cit.* Heft 2, 1877, p. 46, t. 2. f. 24.

Loc. and Horizon. Near Neun Kirchen, in rocks of Lower Permian age.

Leaia tricarinata, Meek and Worthen (1868).

L. tricarinata, M. & W. Illinois Geol. Report, 1868, iii. pp. 540, 541, f. B. 1-3, and ? C; Miller, Cat. American Pal. Foss. 1877, p. 219; Bigsby, Thes. Dev.-Carbonif. 1878, p. 250.

Loc. and Horizon. La Salle County, in lower portion of true Coal-measures; ? St. Clair County, in Upper Coal-measures; Vermillion County, Illinois, in the Lower true Coal-measures.

Leaia wettinensis, Laspeyres (1870).

L. Wettinensis, Laspeyres, Zeitschr. deutsch. geol. Gesellsch. 1870, xxii. pp. 733-745, t. 16. f. 1; Bigsby, Thes. Dev.-Carbonif. 1878, p. 251.

Loc and Horizon. Wettin, Coal-measures.

Leaia Klieveriana, Goldenberg (1873).

L. Leidyi, var. *Klieveri*, Goldenberg, Fauna Sarapontana Foss. Heft 1, 1873, p. 24, t. 1. f. 22.

L. Leidyi, var. *Klieveriana*, Goldenberg, *op. cit.* Heft 2, 1877, p. 46, t. 2. f. 20, 21.

Loc. and Horizon. Saarbrück, Coal-measures.

Leaia, sp. ind.

Leaia, sp., Jones, Geol. Mag. 1871, vii. p. 96; C. W. Peach, Brit. Assoc. Report for 1871, pt. 2, p. 109; Etheridge, Jun., Quart. Journ. Geol. Soc. 1878, xxxiv. pp. 5, 23.

Loc. and Horizon. Ironstone nodule in Wardie Shales, at Wardie, near Edinburgh, Lower Carboniferous series.

XXX.—Notes on the *Species of Peripatus*, and especially on those of *Cayenne and the West Indies*. By H. N. MOSELEY, F.R.S., Fellow of Exeter College, Oxford.

ABOUT two years ago Dr. Günther kindly sent to me for examination a specimen of *Peripatus* received by him from the Amazons; and I also received about the same time a further specimen from the late Mr. Thomas Belt. In attempting to determine the species of these specimens I found many difficulties in the way; and I therefore examined the series of

specimens of *Peripatus* preserved in the British Museum, with a view to clearing up the matter. I came to the conclusion that the species of *Peripatus* as hitherto described were in some considerable confusion, and that only the careful examination of the minute structure of the feet, skin, and other organs in the case of each species would yield a satisfactory result. Being unable to devote the necessary time to the matter, I drew up the following notes, intending to publish them as an assistance to future workers; but hearing that Prof. Perceval Wright was about to prepare a revision of the entire species of *Peripatus*, I sent the notes to him.

Press of other work has prevented Prof. Wright from issuing as yet his monograph, although some most beautiful figures of *P. novæ zelandiæ* have been prepared for it. I therefore publish these somewhat scanty notes to draw attention to the discrepancies which exist in the various accounts.

(1) The genus *Peripatus* was first described by Guilding in 1825 and 1826, in the 'Zoological Journal,' vol. ii. p. 444, tab. xiv. (1826) art. xlvii. Mollusca Carribæana; Isis (1828), Bd. xxi. Taf. ii.

Guilding's specimens came from the forests of St. Vincent in the Antilles. He names his species *Peripatus juliformis*.

This species is said by Blanchard, on the authority of Macleay (reference?), to be found also in Cuba.

(2) Audouin and Milne-Edwards obtained specimens of a *Peripatus* from a spot three leagues distant from the mouth of the river Approuague in Cayenne. These specimens they referred to Guilding's species *juliformis*, considering the differences found by them between their specimens and Guilding's description due to imperfect observation of Guilding. ("Classification des Annélides et description de celles qui habitent les côtes de France," Ann. des Sci. Nat. 1^e sér. xxx. p. 411, pl. xxii. 1833.)

(3.) Wiegmann obtained a specimen of a *Peripatus* from the neighbourhood of Valentia Lake in Columbia. He considered this of the same species as Guilding's, though differing in the number of pairs of feet. (Wiegmann Arch. 1837, i. p. 199.)

(4) C. Moritz found a *Peripatus* in abundance in the island of St. Thomas, D. W. I., in 1839. He found the animal in the valley of Aragua. He gives a very good account of the manner in which the animal squirts out the tenacious fluid, and of the meshworks which this fluid forms as it dries. He further observed that the fluid came not from the mouth, but from each side of the fore part of the body. He says that the large *Julus* of the Antilles does squirt a fluid from its mouth

as an offensive act, and that the fluid is highly irritant, even causing blindness sometimes, according to the natives. (Archiv für Naturg. 1839, Bd. i. p. 175.)

(5) Blanchard considered Milne-Edwards's specimens to have belonged to a different species from Guilding's, and named Edwards's species *P. Edwardsii* from the descriptions published. (Ann. des Sci. Nat. 3^e sér. t. viii. 1847, pp. 139, 140.)

(6) Grube ("Ueber den Bau von *Peripatus Edwardsii*," Müller's Arch. 1853, p. 322) obtained specimens of *Peripatus* from Venezuela, in the neighbourhood of Colonia Jowar. These he referred to *Peripatus Edwardsii*.

The principal distinction hitherto made between the various species of *Peripatus* appears to be in the numbers of feet. A difficulty occurs, because the first pair of feet are mere tubercles without claws, and perforated by the apertures of the ejaculatory ducts of the slime-glands. The last pair of limbs also in some species (*P. capensis*, c. g.) appear as tubercles only. Hence some mistake may occur in the counting of the numbers of the feet in the various species. Guilding and Milne-Edwards appear both to have mistaken the pair of tubercles perforated by the ducts (oral papillæ) for eyes.

Guilding describes his species (*juliformis*) as having thirty-three pairs of feet, not including the oral papillæ.

M.-Edwards and Audouin describe their specimens (*P. Edwardsii*, Blanchard) as having thirty pairs of feet besides the papillæ.

Wiegmann found the same number (thirty) in his Columbian specimen, and concluded that the number must vary with age, because Guilding found thirty-three pairs in his St.-Vincent specimen.

Grube found twenty-nine pairs in one of his three specimens from Venezuela, and thirty in the two others. Nevertheless in his figure (*l. c.* Taf. ix. fig. 1) thirty-one pairs are plainly to be counted besides the oral papillæ. It is doubtful whether the counting of the feet is an error or the drawings are incorrect.

Dr. Günther's specimen of *Peripatus* from the Amazon has thirty-one pairs of feet besides the oral papillæ, just as in Grube's figure.

Further, the late Mr. Thomas Belt kindly permitted me to examine a specimen of a *Peripatus* referred to by him, in his 'Naturalist in Nicaragua',* as "a Myriapod of the division *Sugentia* of Brandt." This specimen, which is dried, has

* The 'Naturalist in Nicaragua,' by T. Belt, F.G.S. London: John Murray, 1874, p. 140.

thirty-one pairs of feet also. It was obtained at Santo Domingo in Nicaragua.

Two species are described from the Cape of Good Hope, *P. brevis* and *P. capensis*, with fourteen and seventeen pairs of feet respectively. It is possible that these are identical; and it is also possible that *P. juliformis* with thirty-three pairs is not distinct from *P. Edwardsii* with from twenty-nine to thirty-one.

Singularly enough I have seen no variation in the Cape or New-Zealand specimens obtained by me; and Captain Hutton found no variation in the case of the latter.

In the British Museum there are, besides the *Peripatus* from the Amazons, several other specimens of the genus.

(1) A bottle contains three specimens purchased of Mr. Cuming, collected by Mr. Gosse, 1846. These specimens are labelled "from Jamaica."

Two of the specimens, one large and the other small, have each thirty-one pairs of feet and appear = *Peripatus Edwardsii*.

The third specimen has thirty-seven pairs of feet, and differs from the other two in general appearance, and in having the surface of the body finely granulated instead of more or less tubercular, and also in having the pits (spiracular?) on the under surface of the foot-cones well marked and circular, and not rather indistinct and linear as in *P. Edwardsii*.

(2) Another bottle contains one specimen marked *Peripatus Blainvillei* (Gay and Blanchard) by Baird. This is from St. Thomas, Danish West Indies. This has twenty-eight pairs of feet. In its outward appearance it resembles the smaller specimen (bottle 1) from Jamaica, which has thirty-one pairs. A note is put on the bottle by Baird, that in Blanchard's description nineteen pairs of feet are described as occurring in *P. Blainvillei*, whilst in his figures there are in one twenty-seven or twenty-eight, and in the other thirty-two to be counted.

(3) A bottle contains a small specimen from the Cape from Mr. Roland Trimen. This has, as in all the Cape specimens I examined, seventeen pairs.

(4) There is a specimen marked *P. Blainvillei* without locality being given. This has thirty-three pairs of feet, and is finely granular on the body-surface like the Jamaica specimen with thirty-seven pairs.

The descriptions of the South-American and West-Indian species are vague, since the figures do not correspond with them.

It is probable that in the case of the three specimens in the

British Museum labelled "Jamaica" there may be an error. The two specimens with thirty-one pairs may be from the mainland and be *P. Edwardsii*. The other may be a true Jamaica species.

The following questions arise :—

Is there a St.-Thomas species with twenty-eight pairs of feet?

A Jamaica species with thirty-seven?

A St.-Vincent species with thirty-three?

P. Edwardsii with thirty-one, with twenty-nine and thirty sometimes?

A Chilian species with nineteen or twenty-seven or thirty-two?

A Cape species with fourteen and another with seventeen? or are these the same?

In the Australian and New-Zealand species the number of feet seems fixed. Mr. Wood-Mason has informed me that he has obtained a new species from the Cape, which he will shortly describe. I trust that he and Prof. Perceval Wright may be able by more careful investigation of the various forms to clear up the confusion which certainly prevails as yet with regard to the species of this isolated genus.

XXXI.—On the Bryozoa (*Polyzoa*) of the Bay of Naples.

By ARTHUR WM. WATERS, F.G.S.

[Plates XXIII. & XXIV.]

[Continued from p. 202*.]

CYCLOSTOMATA.

The classification of the Cyclostomata is even more difficult than that of the Cheilostomata, which partly arises from there being fewer characteristics upon which it can be grounded.

The winter time, when I made the collection, seems to have been specially unfavourable for studying this suborder; for I seldom received colonies with active polypides, and I have been surprised to find what a large number have no oöcia.

We shall probably ultimately have to adopt an arrangement with the Cyclostomata somewhat similar to that introduced by

* Note to page 199.—I find there is a fifth genus *Buskia*, created by the Rev. Tenison Woods, in Proc. Roy. Soc. Tasmania, 1876. This has already been shown by Mr. Etheridge, Jun., to be a duplicate name.